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**TRANSMITTAL  
FORM**

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission

Application Number	10/824,079
Filing Date	April 14, 2004
First Named Inventor	Dean Willberg
Art Unit	
Examiner Name	
Attorney Docket Number	56.0692

**ENCLOSURES (Check all that apply)**

- |   |   |  |
|---|---|--|
| <input type="checkbox"/> Fee Transmittal Form<br><input type="checkbox"/> Fee Attached<br><input checked="" type="checkbox"/> Amendment/Reply<br><input type="checkbox"/> After Final<br><input type="checkbox"/> Affidavits/declaration(s)<br><input type="checkbox"/> Extension of Time Request<br><input type="checkbox"/> Express Abandonment Request<br><input checked="" type="checkbox"/> Information Disclosure Statement<br><input type="checkbox"/> Certified Copy of Priority Document(s)<br><input type="checkbox"/> Response to Missing Parts/Incomplete Application<br><input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53 | <input type="checkbox"/> Drawing(s)<br><input type="checkbox"/> Licensing-related Papers<br><input type="checkbox"/> Petition<br><input type="checkbox"/> Petition to Convert to a Provisional Application<br><input type="checkbox"/> Power of Attorney, Revocation<br>Change of Correspondence Address<br><input type="checkbox"/> Terminal Disclaimer<br><input type="checkbox"/> Request for Refund<br><input type="checkbox"/> CD, Number of CD(s) _____ | <input type="checkbox"/> After Allowance communication to Technology Center (TC)<br><input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences<br><input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)<br><input type="checkbox"/> Proprietary Information<br><input type="checkbox"/> Status Letter<br><input type="checkbox"/> Other Enclosure(s) (please identify below):<br>Postcard |
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Remarks

**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT**

Firm or Individual name	Thomas O. Mitchell
Signature	<i>Thomas O. Mitchell</i>
Date	May 25, 2004

**CERTIFICATE OF TRANSMISSION/MAILING**

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Typed or printed name	Pushpa Mohan
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Signature

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Date	May 25, 2004
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This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Willberg et. al

Serial No.: 10/824,079

Filed: April 14, 2004

For: Mapping Fracture Dimensions

Group Art Unit:

Examiner:

Docket No.: 56.0692

**TRANSMISSION OF INFORMATION DISCLOSURE STATEMENT**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

In compliance with the duty of disclosure under 37 C.F.R. § 1.56, it is respectfully requested that this Information Disclosure Statement be entered and the documents listed on attached Form PTO-1449 be considered by the Examiner and made of record. Copies of the listed documents required by 37 C.F.R. § 1.98(a)(2) are enclosed for the convenience of the Examiner.

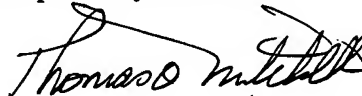
In accordance with 37 C.F.R §§ 1.97(g),(h), this Information Disclosure Statement is not to be construed as a representation that a search has been made, and is not to be construed to be an admission that the information cited is, or is considered to be, material to patentability as defined in 37 C.F.R. § 1.56(b).

The present Information Disclosure Statement is being filed before the receipt of a first office action on the merits, and hence is believed to be timely filed in accordance with 37 C.F.R

§ 1.97(b). No fees are believed to be due in connection with the filing of this Information Disclosure Statement; however, should any fees under 37 C.F.R. §§ 1.16 to 1.21 be deemed necessary for any reason relating to these materials, the Assistant Commissioner is hereby authorized to deduct said fees from Schlumberger Deposit Account No. 04-1579 (56.0692).

Applicants respectfully request that the listed document be made of record in the present case.

Respectfully submitted,

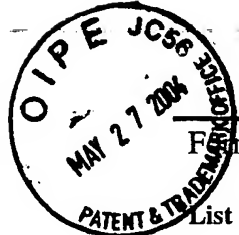


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May 25, 2004

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Form PTO-1449 (modified)

Atty. Docket No.

56.0692

Serial No.

10/824,079

List of Patents and Publications for Applicant's

Applicant  
Willberg et al.

## INFORMATION DISCLOSURE STATEMENT

(Use several sheets if necessary)

Filing Date:

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Foreign Patent Documents

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Other Art

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## U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date of App.
	A1						
	A2						
	A3						
	A4						
	A5						

## Foreign Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Country	Class	Sub Class	Translation Yes/No
	B1						
	B2						
	B3						
	B4						
	B5						

## Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C1	<i>Creating an Explosion: The theory and practice of detonation and solid chemical explosives</i> – J.A. Burgess and G. Hooper, <i>Physics in Technology</i> , November 1977, pp 257 – 265
	C2	<i>dBX™ Seismic Energy Source Technical Information Reference MSDS # 1316</i> – Dyno Nobel Inc.
	C3	<i>VIBROGEL™ Seismic Energy Source Technical Information Reference MSDS # 1019</i> – Dyno Nobel Inc.
	C4	<i>Towards the Miniaturization of Explosive Technology</i> - Proceedings of the 23 <sup>rd</sup> International Conference on Shock Waves, 2001 – D. Scott Stewart.
	C5	<i>Underwater Explosions as Acoustic Sources</i> – D.E. Weston, <i>Proc. Phys. Soc.</i> , Vol.76, No. 2, pp 233 – 249.
	C6	<i>Experimental Studies on Downhole Seismic Sources</i> – S.T. Chen, E.A. Eriksen and M. A. Miller, <i>Geophysics</i> , Vol. 55, No.12, pp 1645 – 1651, December, 1990

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List of Patents and Publications for Applicant's  INFORMATION DISCLOSURE STATEMENT  (Use several sheets if necessary)		Applicant Willberg et al.	
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### Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C7	<i>Subsurface Imaging Using Reversed Vertical Seismic Profiling and Crosshole Tomographic Methods.</i> – S.T. Chen, L.J. Zimmerman and J.K. Tugnait, Geophysics, Vol. 55, No. 11, pp 1478 – 1487, November, 1990.
	C8	<i>Experimental Studies of Downhole Seismic Sources</i> – S.T. Chen and E.A. Eriksen, Geophysics, presented at the 59 <sup>th</sup> Ann. Internat. Mtg., Soc. Expl., Geophys., Expanded Abs.
	C9	SPE 68854 - <i>Field Test of a Novel Low Viscosity Fracturing Fluid in the Lost Hills Field, California</i> – S. Vasudevan, D.M. Willberg, J.A. Wise, T.L. Gorham, R.C. Dacar, P.F. Sullivan, C.L. Boney and F. Mueller
	C10	<i>Background for Hydraulic Fracturing Pressure Analysis Techniques</i> – S.N. Gulragani and K.G. Nolte, Appendix to Chapter 9: Reservoir Stimulation, 3 <sup>rd</sup> Edition, M.J. Economides and K.G. Nolte - p A9-1 to A9-16.
	C11	SPE 15214 – <i>Monitoring Hydraulic Fracture Stimulations with Long-Period Seismometers to Extract Induced Fracture Geometry</i> – F.J. Mauk and K.D. Mahrer
	C12	SPE18538 – <i>Uplifts and Tilts at Earth's Surface Induced by Pressure Transients from Hydraulic Fractures.</i> – Ian D. Palmer
	C13	SPE 21834 – <i>Microseismic Logging: A New Hydraulic Fracture Diagnostic Method.</i> – K.D. Mahrer.
	C14	SPE 27506 – <i>Data Gathering for a Comprehensive Hydraulic Fracturing Diagnostic Project: A case Study.</i> – L.S. Truby, R.G. Keck and R.J. Withers.
	C15	SPE 30507 – <i>Microseismic Mapping of Hydraulic Fractures Using Multi-Level Wireline Receivers.</i> – N.R. Warpinski, B.P. Engler, C.J. Young, R. Peterson, P.T. Branagan and J.E. Fix
	C16	SPE 30738 – <i>Hot Dry Rock: A Versatile Alternative Energy Technology</i> – D.V. Duchane
	C17	SPE 36450 – <i>Microseismic Monitoring of the B-Sand Hydraulic Fracture Experiment at the DOE/GRI Multi-Site Project.</i> – N.R. Warpinski, T.B. Wright, J.E. Uhl, P.M. Drozda, R.E. Peterson and P.T. Branagan
	C18	SPE 38573 – <i>Microseismic and Deformation Imaging of Hydraulic Fracture Growth and Geometry in the C Sand Interval, GRI/DOE M-Site Project.</i> – N.R. Warpinski, P.T. Branagan, R.E. Peterson, J.E. Fix, J.E. Uhl, B.P. Engler and R. Wilmer.
	C19	SPE 38574 – <i>Propagation of a Hydraulic Fracture into a Remote Observation Wellbore: Results of C-Sand Experimentation at the GRI/DOE M-Site Project.</i> – P.T. Branagan, R.E. Peterson, N.R. Warpinski, S.L. Wolhart and R.E. Hill
	C20	SPE 38576 – <i>A Systematic Study of Fracture Modeling and Mechanics Based on Data from GRI/DOE M-Site Project</i> – T.B. Wright and T.W. Green

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### Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
	C21	SPE 38577 – <i>Cotton Valley Hydraulic Fracture Imaging Project</i> . – Ray N. Walker, Jr.
	C22	SPE 40014 – <i>Mapping Hydraulic Fracture Growth and Geometry Using Microseismic Events Detected by a Wireline Retrievable Accelerometer Array</i> . – N.R. Warpinski, P.T. Branagan, R.E. Peterson, S.L. Wolhart and J.E. Uhl.
	C23	SPE 47315 – <i>Monitoring and Management of Fractured Reservoirs Using Induced Microearthquake Activity</i> . – A. Jupe, R. Jones, B.Dyer and S. Wilson
	C24	SPE49194 – <i>Carthage Cotton Valley Fracture Imaging Project – Imaging Methodology and Implications</i> . – R.N. Walker Jr., R.J. Zinno, J.B. Gibson, Ted Urbancic and Jim Rutledge
	C25	SPE 57593 – <i>Microseismic Monitoring of the B-Sand Hydraulic-Fracture Experiment at the DOE/GRI Multisite Project</i> . – N.R. Warpinski, T.B. Wright, J.E. Uhl, B.P. Engler, P.M. Drozda, R.E. Peterson and P.T. Branagan
	C26	SPE 63034 – <i>East Texas Hydraulic Fracture Imaging Project: Measuring Hydraulic Fracture Growth of Conventional Sandfracs and Waterfracs</i> . – Michael J. Mayerhofer, Ray N. Walker Jr., Ted Urbancic and James T. Rutledge
	C27	SPE 64434 – <i>State-of-the-Art in Hydraulic Fracture Diagnostics</i> . C.L. Cippola and C.A. Wright.
	C28	SPE 71649 – <i>Analysis and Prediction of Microseismicity Induced by Hydraulic Fracturing</i> . N.R. Warpinski, S.L. Wolhart and C.A. Wright
	C29	SPE 77442 – <i>A Practical Guide to Hydraulic Fracture Diagnostic Technologies</i> . – R. D. Barree, M.K. Fisher and R. A. Woodroof
	C30	SPE 77441 – <i>Integrating Fracture Mapping Technologies to Optimize Stimulations in the Barnett Shale</i> . – M.K. Fisher, C.A. Wright, B.M. Davidson, A.K. Goodwin, E.O. Fielder, W.S. Buckler and N.P. Steinsberger
	C31	SPE 77440 – <i>Microseismic Imaging of Hydraulic Fracture Complexity in the Barnett Shale</i> . S.C. Maxwell, T.I. Urbancic, N. Steinsberger and R. Zinno.